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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/464,830	12/17/1999	KARL J. MOLNAR	8194-350	8144

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EXAMINER

AHN, SAM K

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 02/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/464,830

Applicant(s)

MOLNAR, KARL J.

Examiner

Sam K Ahn

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-18 and 25-36 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 19 and 21 is/are rejected.
- 7) ☒ Claim(s) 2, 4-6, 20 and 22-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 3 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 4 recites the limitation "the interference-to-noise ratio" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ranta et al. ('328) in view of Petrus ('906).

Regarding claims 1 and 19, Ranta teaches a method of receiving a signal in the presence of noise and interference. (see Fig.2) Ranta teaches summation (1) of signal from 13 and 23 where 13 is the desired signal and 23 is an interference. It is inherent that the system shown receives signal including noise as there is no perfect reception of signal. Further, the signal is demodulated (2) and received by Joint Detector (3). When the signal comprises only desired signal, the system shown does not need to perform operation with consideration by 23 and separate the desired signal from interference and noise. (note col.2, line 42 – col.3, line29) On the other hand, when the noise and interference is present from 23, the receiver will jointly demodulate by 2 and 3 in Fig.2. However,

Ranta does not explicitly teach a criterion distinguishing between operation of demodulation and joint demodulation by a relationship between the signal, noise and interference. Petrus teaches this limitation. Petrus teaches estimation of signal to interference and noise ratio (SINR) as a criterion in determining further step. (see Fig.3) When SINR is above a predetermined threshold, it may simply demodulate. Below the predetermined threshold, it may go to modulus adaptation and timing offset is adjusted in step 307. Therefore, it considers time dispersion and properly adjusts incoming signal. Continuous timing adjustment is made operating in a loop until SINR is above the threshold and eventually demodulated. It would have been obvious to one skilled in the art at the time of invention to include the steps shown in Fig.3 of Petrus after 1 of Fig.2 taught by Ranta for the purpose of properly identifying received signal, which may include noise and interference, as SINR is a well-known criterion in determining quality of received signal.

Regarding claims **3** and **21**, Ranta in view of Petrus teaches all subject matter claimed, as applied to claim 1 or 19. Further recited limitation has been already explained above.

Allowable Subject Matter

3. Claims **2**, **5-6**, **20** and **22-24** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcome the claim objection.
5. Claims 7-18 and 25-36 are allowable.

The following is a statement of reasons for the indication of allowable subject matter: Prior art does not teach a method of detecting a desired signal including a desired signal synchronization sequence from a received signal that includes an interfering signal having an interfering signal synchronization sequence comprising detecting method of synchronizing the received signal, generating a first desired signal, an estimate of an interference to noise ratio of the received signal and an identification of the interfering signal synchronization sequence from the synchronized received signal, generating an estimate of a carrier to interference and noise ratio of the received signal, jointly demodulating the received signal in response to the identification of the interfering signal synchronization sequence, to generate a second desired signal based upon the estimate of the carrier to interference and noise ratio of the received signal and the estimate of the interference to noise ratio of the received signal.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to demodulation systems for receiving signal in presence of noise and interference.
Sato et al. (US-5,222,106)

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Youssefmir et al. (US-6,141,567)

Miya (US-6,370,131)

Hottinen et al. (US-5,995,499)

Suzuki (US-5,787,122)

Haber (US-5,790,529)


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam K Ahn whose telephone number is 703-305-0754. The examiner can normally be reached on Mon-Fri 9am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

SKA

February 23, 2003


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600